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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR       | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------------|---------------------|------------------|
| 10/807,944  | 03/24/2004  | Francesco de Rege Thesauro | 100209              | 5134             |
| 29050 7590 03/28/2008<br>STEVEN WESEMAN<br>ASSOCIATE GENERAL COUNSEL, I.P.<br>CABOT MICROELECTRONICS CORPORATION<br>870 NORTH COMMONS DRIVE<br>AURORA, IL 60504 |             |                            |                     |                  |
| EXAMINER  |             |                            |                     |                  |
| GEORGE, PATRICIA ANN  |             |                            |                     |                  |
| ART UNIT  |             | PAPER NUMBER               |                     |                  |
| 1792  |             |                            |                     |                  |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/807,944

**Applicant(s)**

DE REGE THESAURO ET AL.

**Examiner**

Patricia A. George

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5, 7-12 and 14-36 is/are pending in the application.
- 4a) Of the above claim(s) 17-36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-12, and 14-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date \_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/1/2008 has been entered.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3, 7-10, and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sandhu et al (6,099,604) in view of Bringham et al. (6,812,193) and Beitel et al. (WO 02/26906 A1 published April 4, 2002).

Sandhu teaches a chemical-mechanical polishing composition comprising: the generic alumina abrasive (see col. 4, line 47) in an amount of about 0 to 25 wt%, which overlaps and encompasses applicants' ranges of claims 1, 7, 10, and 14; preferred polyvalent metal ions, such as from calcium in quantities sufficient for chelating which improves solubility and dispersability of dislodged surface moiety which complexes to water (see col. 6, line 11+); and further includes water with solvent (see col. 4, lines 34-37) as described in applicants' specification as a liquid carrier.

Sandhu is silent as to the amount of metal ions in the 0.005 to 15 wt % of polyvalent chelating agent, such as applicants' specifically claimed range of about 0.05 to about 50 mmol/kg of metal ions, however Sandhu teaches quantity of chelating agents sufficient to rapidly remove (applicants' intend use increased removal rate- of para. 52 in applicants' own specification) and that polyvalent chelating is in a quantity sufficient to be functional, which appears to be written on applicants claimed range.

It would have been obvious to one of ordinary skill in the art at the time of invention was made, to modify the invention of polishing composition, as Sandhu, to include the specific quantity of metal ions, as applicants' claimed limitation, because Sandhu teaches the presence of metal ions in chelating agents are sufficient to provide rapid removal (applicants' intended use increase removal rate) and therefore a composition of similar results, would have provided similar quantities. Further, as

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applicants' lower limit of the claimed range is so small (0.05 mmol/kg) the reference of Sandhu would appear to have at least sufficient quantities to overlap applicants' claimed lower limit. Also, as the reference of Sandhu teaches quantities that are sufficient for chelating, similar compositions (i.e. similar quantities) would have similar functions, as in claims 1-3.

Although Sandhu is silent as to applicants' specific quantity of metal ions, Bringham et al. (6,812,193) teaches a slurry used for polishing metals, such as tantalum (see Summary...), includes about 0.001 to 5 grams/liter of metal ions such as those presented as salts of calcium, chloride ion, which appears to encompass applicants' claimed ranges of about 0.05 to about 5 mmol/kg and about 0.05 to about 10 mmol/kg (see Best and Various Modes...). Bringham et al. teaches the role of the abrasive is to facilitate material removal by mechanical action and the oxidizing agent, typically inorganic metal salts (i.e. chloride ions), works to enhance mechanical removal via a dissolution process.

Absent of unexpected results, it would have been obvious to one of ordinary skill in the art at the time of invention was made, to include any amount of metal ions, such as applicants' specifically claimed quantity, when teaching the slurry for metal polishing, as Small, because Bringham teaches use of such quantities of metal ions will enhance mechanical removal.

It is noted, that Bringham fails to use the units of mmol/kg of ions as defined in applicants' claims 1, 2, 3, and 10, however, it appears as if the disclosed amounts of metal ions would overlap applicants' claimed mmol/kg upon unit conversion.

It would have been obvious to one of ordinary skill in the art at the time of invention was made, to convert the grams/liter, as taught by Bringham, into molarity, as applicants' claimed unit, if the density of the composition is known. Further, the density of the composition can be easily measured.

Sandhu does not explicitly teach species of alumina particles, such as applicants' specifically claimed alpha type.

Beitel teaches use of alpha alumina particles are known (see lines 5-6 of page 20).

It would have been obvious to one of ordinary skill in the art at the time of invention was made, to modify the composition, of Sandhu, to include applicants' specifically claimed alpha type particles, as Beitel, because Beitel teaches such particle types are known to be functional, and use of materials known successfully functional are cost saving.

As to claims 8-9 and 15-16, Sandhu teaches the pH of any desired range and further elaborates on how to accomplish acidic, basic, or neutral compositions, which encompasses applicants' ranges. See col. 7, lines 8-10.

It would have been obvious to one of ordinary skill in the art at the time of invention was made, to modify the composition, of Sandhu, to include applicants' specifically claimed pH ranges, because Sandhu teaches methods of adjusting compositions for any range of pH are known to be effective, and use of methods known effective are cost saving.

***Claim Rejections - 35 USC § 103***

Claims 4-5, and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sandhu et al (6,099,604) in view of Beitel et al. (WO 02/26906 A1 published April 4, 2002) as applied to claims 1-3, 7-10, and 14-16 above, further in view of Kauffman (6,432,828).

As to claims 4 and 11, Sandhu is silent as to types of alumina particles, such as fumed.

Kaufman teaches it is preferred to use abrasives comprising fumed alumina. See col. 7, line 38.

It would have been obvious to one of ordinary skill in the art at the time of invention was made, to modify the composition, of Sandhu, to include applicants' specifically claimed fumed type alumina particles, because Kaufman teaches such types of particles are preferred.

As to claims 5 and 12, the modified invention of Sanhu teaches fumed alumina particles in quantity of about 1-15 wt% (see col.4, line 52) which encompasses applicants' ranges. See col. 7, line 26 of Kaufman.

### ***Response to Arguments***

The new grounds of rejection, above, as a result of an updated search, render applicants' arguments moot.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patricia A. George whose telephone number is (571) 272-5955. The examiner can normally be reached on Mon. - Fri. between 8:00 am and 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Duy-Vu N Deo/  
Primary Examiner, Art Unit 1792

/Patricia A George/  
Examiner, Art Unit 1792